

HIDDEN TREASURE

Suggested Grades

4, 5

SD Mathematics Strand & Standard (*Primary for Task*)

Geometry

5.G.2.3 Students are able to use two-dimensional coordinate grids to find locations and represent points and simple figures.

Task Summary

Students plot and connect ordered pairs.

Time and Context of Task

30 – 45 minutes of classroom time, preceded by an understanding of graphs

Materials Needed

Graph Paper, Pencil, Straight Edges, and Direction Sheet

Author and Lead Teacher for This Task

Gloria Vavra

Wessington Springs Schools

HIDDEN TREASURE

Your Task is to find the hidden treasure by correctly plotting and connecting the sets of ordered pairs.

Finding the Treasure

Graph and connect, in sequence, each set of ordered pairs:

1. $(3,6), (1,6), (1,2), (3,2), (3,3), (2,3)$

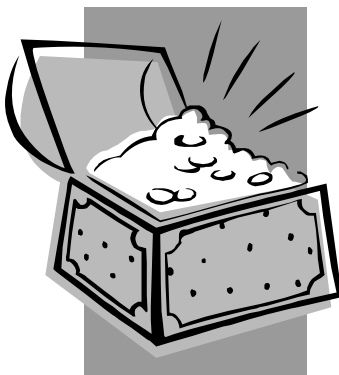
2. $(6,6), (3,6), (3,2), (6,2)$

3. $(3,7), (3,3), (6,3)$

4. $(7,7), (2,8), (2,3), (7,4)$

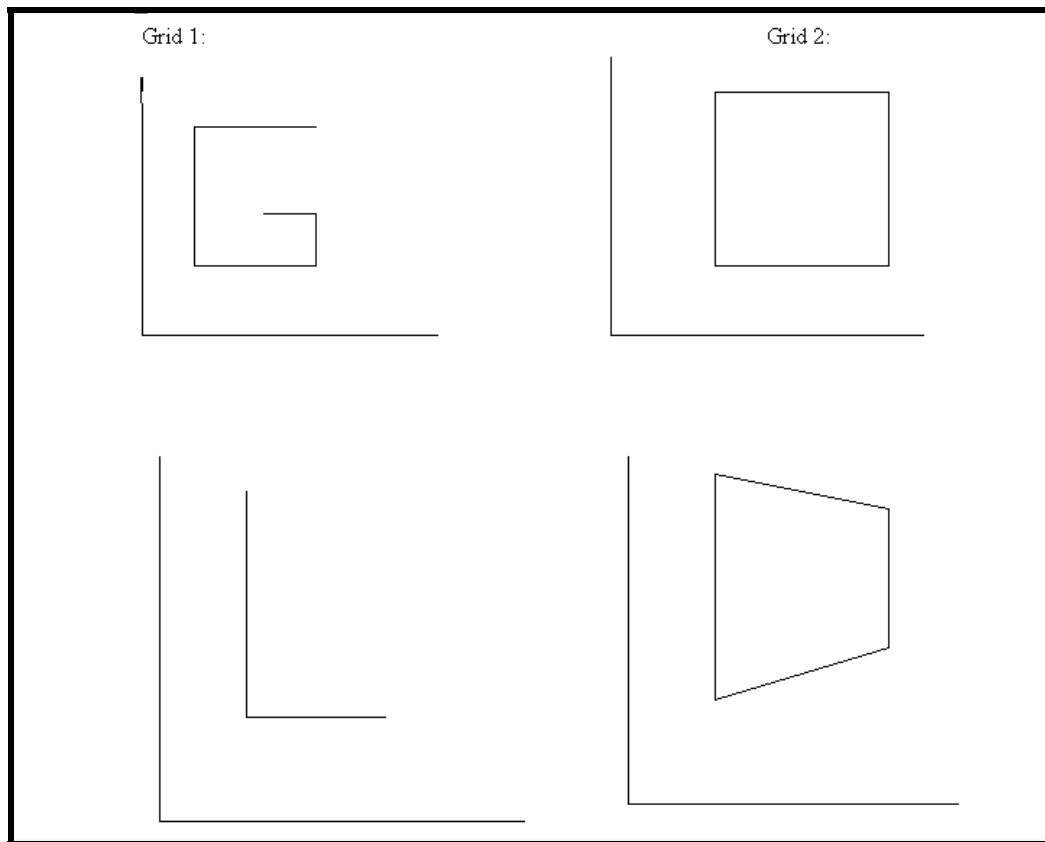
Challenge Task

Create your own hidden treasure puzzle, or create a puzzle to spell out your name.



Hidden Treasures

Answer Key



CONTENT STANDARDS

Primary Standard

Strand Name: Geometry

SD Goal: Students will use the language of Geometry to discover, analyze, and communicate geometric concepts, properties, and relationships.

Indicator: Use properties of geometric figures to solve problems from a variety of perspectives.

Standard: 5.G.2.3 Students are able to use two-dimensional coordinate grids to find locations and represent points and simple figures.

NCTM Process Standards

Problem Solving

- Apply and adapt a variety of appropriate strategies to solve problems

Connections

- Recognize and use connections among mathematical ideas

Problem-Solving Strategies

- Developing formulas and writing equations
- Drawing pictures, graphs, and tables
- Looking for patterns
- Use of manipulative
- Ordered directions

ASSESSMENT TOOLS

Task Rubric:

Standard	Advanced	Proficient	Basic	Below Basic
5.G.2.3 Students are able to use two-dimensional coordinate grids to find locations and represent points and simple figures.	Students graphs are accurately and neatly constructed ordered pairs are accurately represented and plotted; student solution to the hidden question is accurate.	Student graphs are accurate, ordered pairs are correct and student solution is accurate.	Students have a concept of graphs demonstrated, Ordered pairs are present, generally in correct location, hidden question is unanswered.	Students have many errors in graph completion, ordered pairs are missing, question remains unanswered.

Additional rubrics can be retrieved from K-12 Exemplars.com
<http://www.exemplars.com/resources/rubrics/assessment.html>

**Fifth Grade Geometry
Performance Descriptors**

Advanced	Fifth grade students performing at the advanced level: <ul style="list-style-type: none"> • classify quadrilaterals and triangles; • create a simple figure on a coordinate grid using ordered pairs.
Proficient	Fifth grade students performing at the proficient level: <ul style="list-style-type: none"> • describe two- and three-dimensional figures; • graph ordered pairs; • identify a turn (rotation) or flip (reflection) of a given figure; • classify angles.
Basic	Fifth grade students performing at the basic level: <ul style="list-style-type: none"> • identify squares, rectangles, and triangles; • locate ordered pairs from given points.

**Fifth Grade Geometry
ELL Performance Descriptors**

Proficient	Fifth grade ELL students performing at the proficient level: <ul style="list-style-type: none"> • describe squares, rectangles, isosceles, and equilateral triangles; • graph ordered pairs; • read, write, and speak the language of mathematics.
Intermediate	Fifth grade ELL students performing at the intermediate level: <ul style="list-style-type: none"> • identify and verbally describe squares, rectangles, isosceles, and equilateral triangles; • graph ordered pairs; • explain in geometric terms the sequence of steps used in solving problems; • give simple oral responses to questions on topics presented in class.
Basic	Fifth grade ELL students performing at the basic level: <ul style="list-style-type: none"> • identify verbally squares, rectangles, and triangles with appropriate action; • give limited written responses, which may include simple sentences, to questions on topics presented in class; • recognize and use basic geometric terms; • respond to yes or no questions and to problems presented pictorially or numerically in class.
Emergent	Fifth grade ELL students performing at the emergent level: <ul style="list-style-type: none"> • recognize symbolically and pictorially represented mathematical concepts; • copy and draw basic geometric figures; • imitate pronunciation of geometric terms; • use non-verbal communication to express mathematical ideas such as recognizing simple geometric figures.
Pre-emergent	Fifth grade ELL students performing at the pre-emergent level: <ul style="list-style-type: none"> • observe and model appropriate cultural and learning behaviors from peers and adults; • listen to and observe comprehensible instruction and communicate understanding non-verbally.

HIDDEN TREASURE

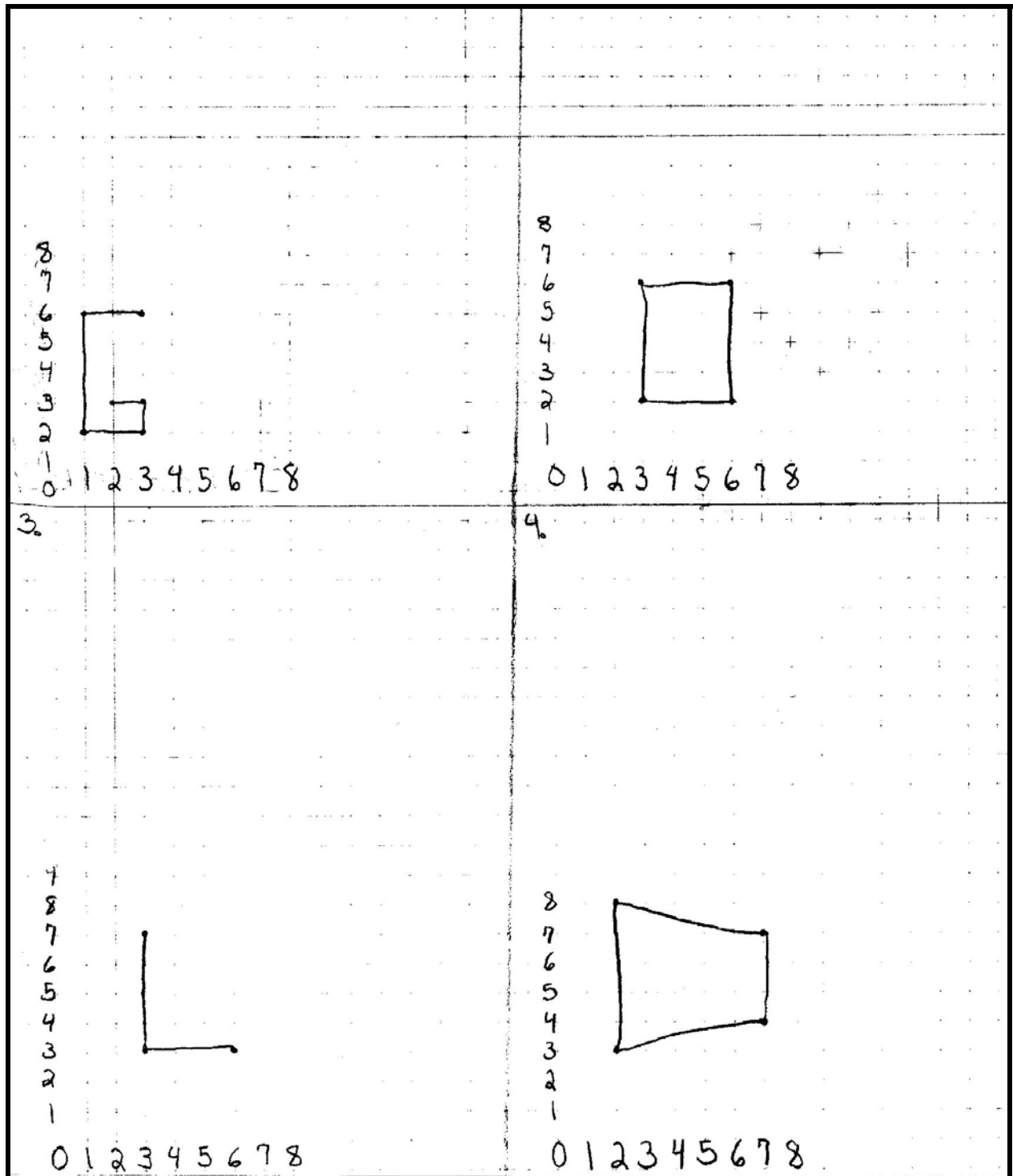
Student Work Samples



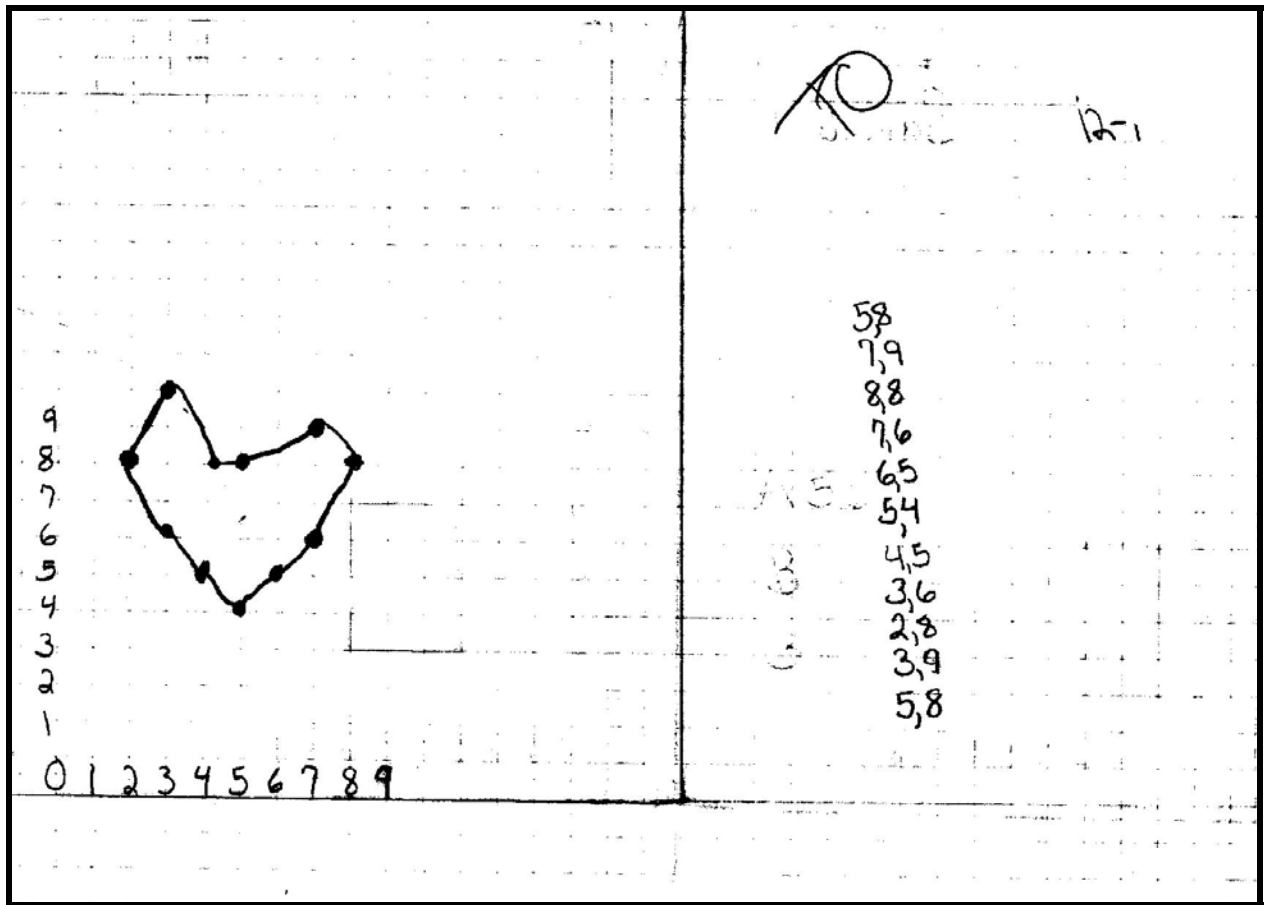
As you examine the samples, consider the following questions:

- In light of the standard/s addressed and the assessment tools provided, what evidence does the work provide that students are achieving proficiency in the knowledge and skills addressed by the standard/s for the task?
- Is the task/activity well designed to help students acquire knowledge and demonstrate proficiency? Is the task/activity clearly aligned with the standards? In what ways would you adapt the task/activity to better meet the needs of your students?

Student Work Sample #1
Page 1



Sample #1 – Page 2



Looking at Student Work – Instructor notes and rating for work sample #1:

Advanced. The student had a firm grasp of the task and the extension was carefully thought out and imaginative. The graphs were correctly labeled and all directions were followed.

Student Work Sample #2
Page 1

Direction sheet Finding Hidden Treasures

Graph in and connect in sequence, in four separate grids:

1. ~~(3,6), (4,6), (4,2), (3,2), (3,3), (2,3)~~
2. ~~(6,6), (3,6), (3,2), (6,2)~~
3. ~~(3,7), (3,3), (3,5)~~
4. ~~(7,7), (2,8), (2,3), (7,4)~~

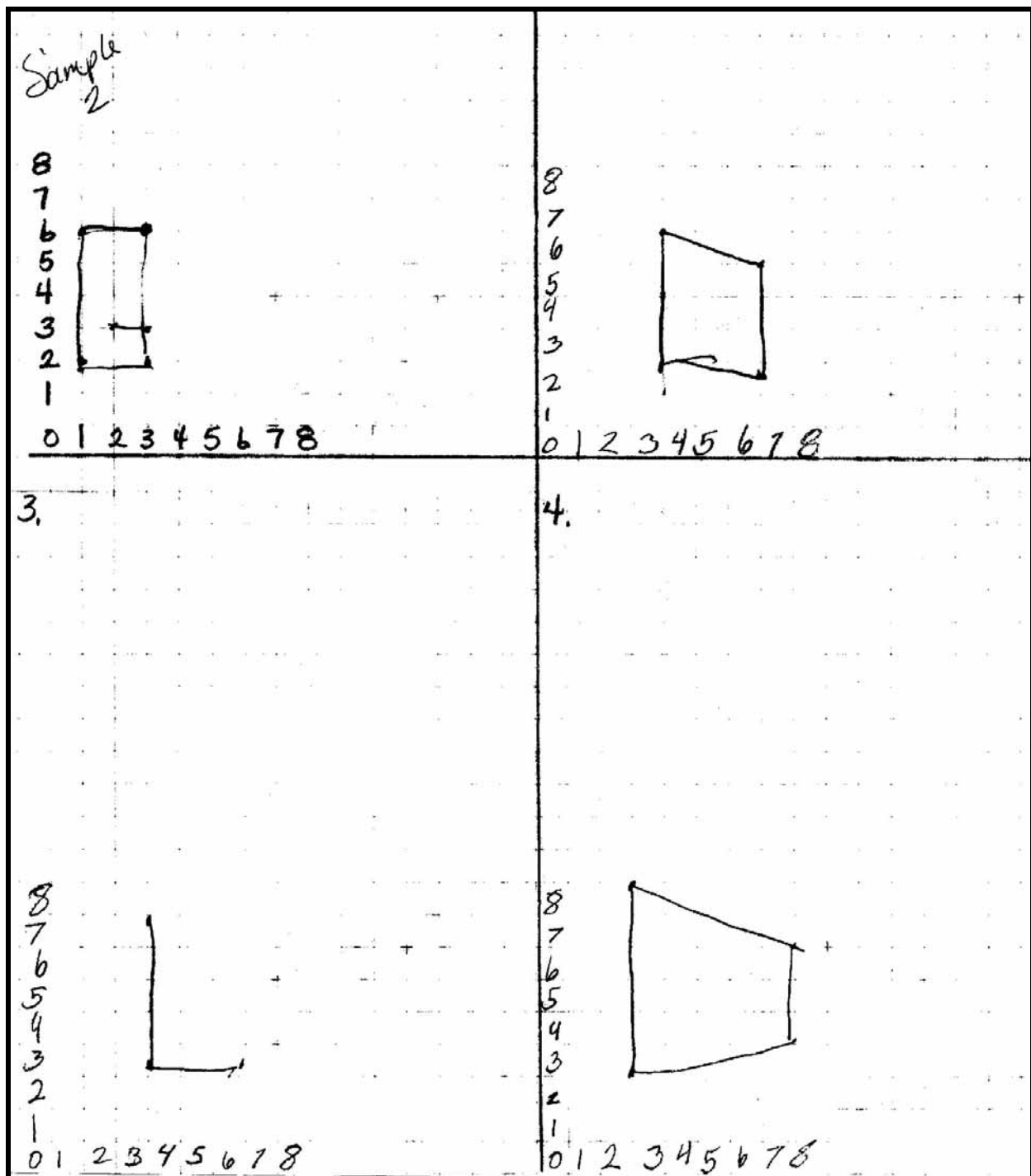
First number goes across the bottom, second number go up on left side.

Sample
2

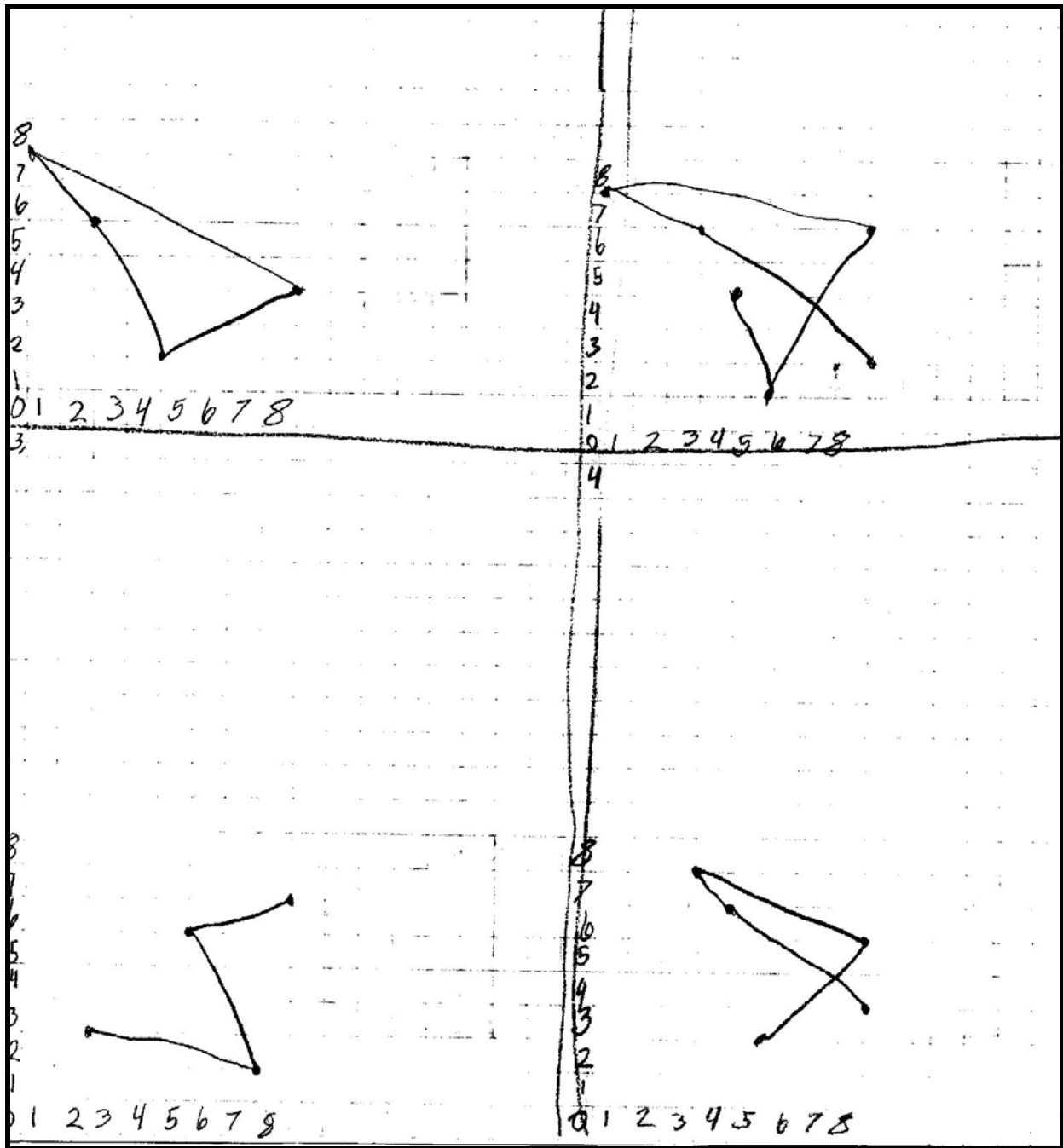
Additional Task: (Create your own hidden treasure puzzle, or create a puzzle to spell out your name.

1. (8, 4), (1, 8), (2, 6), (4, 2)
2. (4, 5), (5, 2), (8, 7), (1, 8), (3, 7), (8, 3)
3. (8, 7), (5, 6), (7, 2), (2, 3)
4. (8, 1), (4, 7), (3, 8), (8, 6), (5, 3)

Sample #2 - Page 2



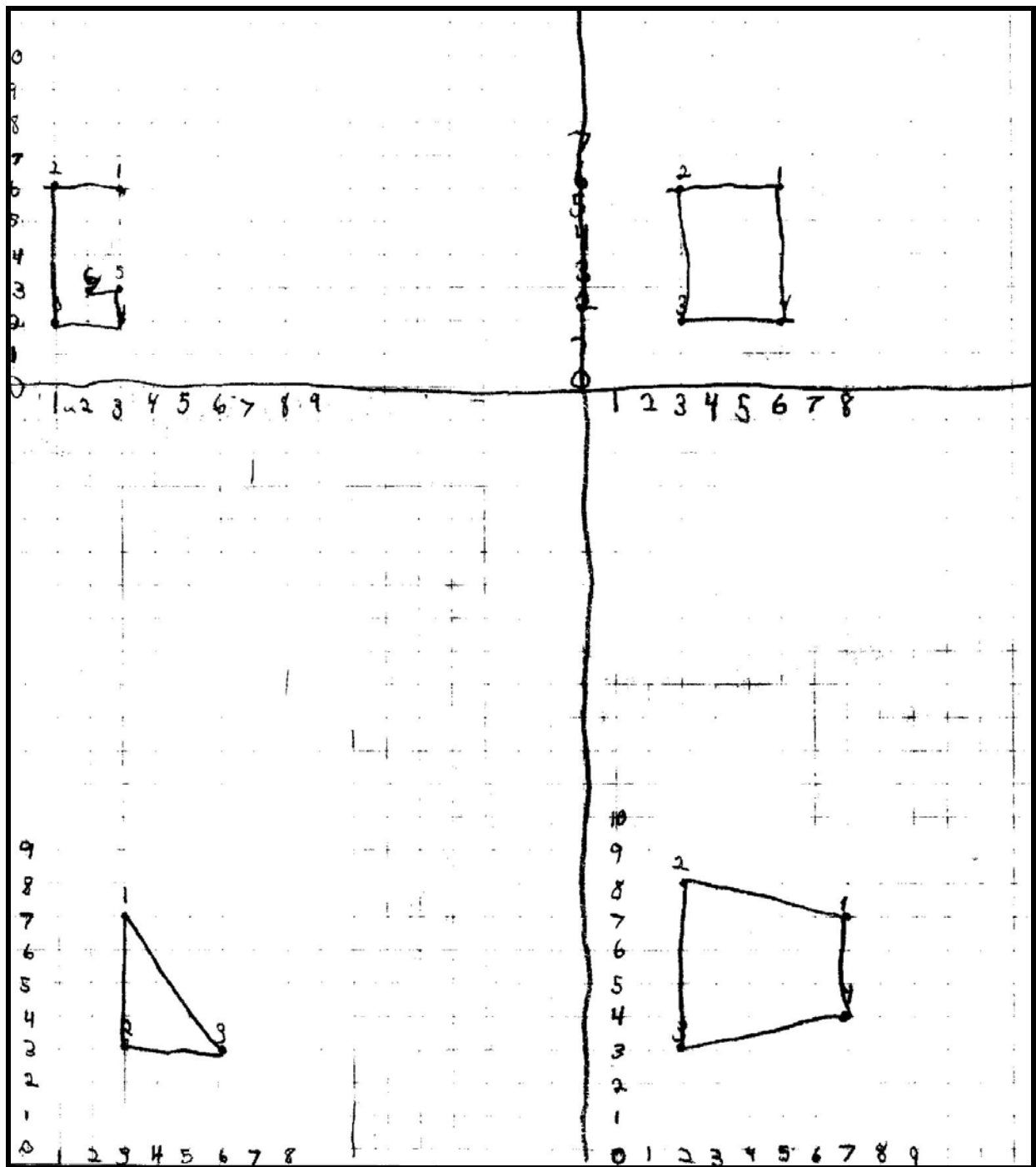
Sample #2 – Page 3



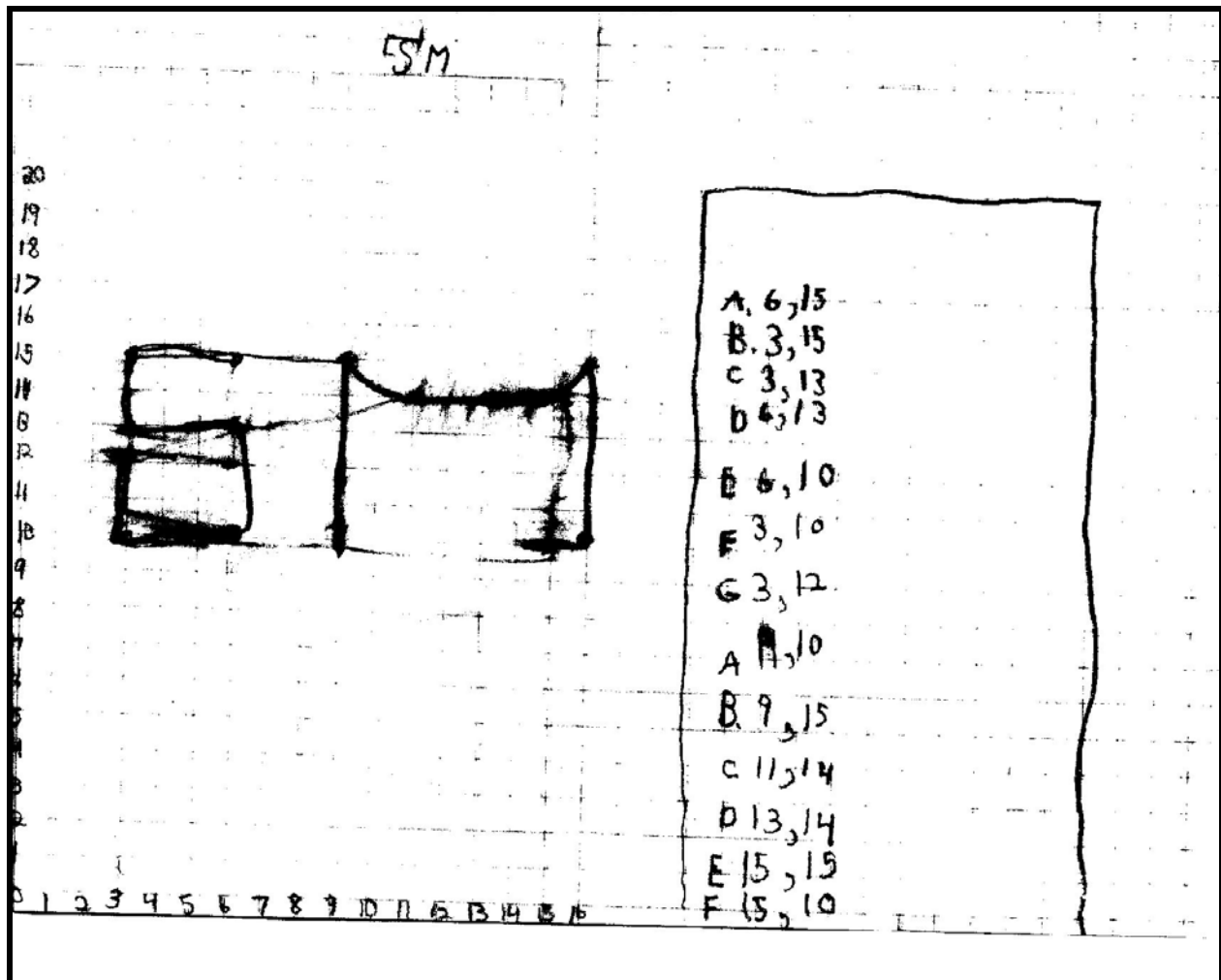
Looking at Student Work – Instructor notes and rating for work sample #2:

Proficient. The student showed an understanding of the direction, and completed the required part with accuracy. Labeling of the graphs was at times inconsistent, but did not affect the outcome. Student did use the verbal directions given too write oral directions to follow. Additional task was sketchy and hard to follow, though correct.

Student Work Sample #3
Page 1



Sample #3 – Page 2



Looking at Student Work – Instructor notes and rating for work sample #3:

Proficient/Basic. The student showed an understanding of the direction, and completed the required part with accuracy. Student added extra points as in a dot-to-dot to complete letters. The extension was completed, but showed a certain lack of understanding as it appears the figure was drawn, then the points assigned.

INSTRUCTIONAL NOTES

Author Comments

The students seemed to grasp the idea of correctly graphing the points, the neatness and accuracy need to be stressed, as they grow older and graph linear equations and vectors precision will be very important.

Task Extensions

The students were given time to complete the extension, but it was limited and students were frustrated that they did not have time to finish their names or drawings as they would have liked to

Common Strategies

Students need to have an understanding of graphing points, and the correct order in which to graph them. They are also challenged to be creative through the use of the extension to allow for individuality.

Common Misunderstandings

Students had some difficulty as the task began understanding that the order the points were graphed would affect their results.

Resources

SD Mathematics Content Standards

<http://www.doe.sd.gov/contentstandards/math/index.asp>

SD Assessment and Testing

<http://www.doe.sd.gov/octa/assessment/index.asp>

The National Assessment of Educational Progress (NAEP)

<http://www.doe.sd.gov/octa/assessment/naep/index.asp>

National Council of Teachers of Mathematics

<http://nctm.org/>

Looking at Student Work

<http://www.lasw.org/index.html>